

*United States Court of Appeals  
for the Second Circuit*



**PETITIONER'S  
BRIEF**



# 74-1830

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United States Court of Appeals  
For the Second Circuit

AMSTAR CORPORATION,  
CALIFORNIA AND HAWAIIAN SUGAR  
COMPANY and SuCREST CORPORATION,

*Petitioners,*  
vs.

UNITED STATES ENVIRONMENTAL  
PROTECTION AGENCY,

*Respondent.*

On Petition for Review of the Action of the  
Administrator of the Environmental Protection Agency

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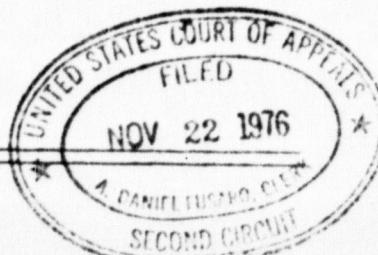
BRIEF FOR PETITIONER  
AMSTAR CORPORATION

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UNITED STATES COURT OF APPEALS

FOR THE SECOND CIRCUIT

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AMSTAR CORPORATION, et al., :  
Petitioners, : Docket Nos.

74-1830

-against- : 74-2246  
74-1841

UNITED STATES ENVIRONMENTAL :  
PROTECTION AGENCY, :  
Respondent. :  
- - - - - x

**BRIEF FOR PETITIONER  
AMSTAR CORPORATION**

**PRELIMINARY STATEMENT**

This is a petition by Amstar Corporation ("Amstar") for review of the action of the Administrator of the United States Environmental Protection Agency ("EPA") in promulgating effluent limitations guidelines for the crystalline cane sugar refining industry pursuant to the Federal Water Pollution Control Act, 33 U.S.C. § 1251 et seq. (the "Water Act"). The effluent limitations guidelines are published at 39 Fed. Reg. 10522 (March 20, 1974) and are codified at 40 C.F.R. § 409 (R 3100-07, A-244-51\*).

Amstar seeks an order pursuant to Section 509(c) of the Water Act remanding the regulations to EPA and requiring

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\* "R" followed by a number refers to a page number in the Record on Review. "A-" refers to a page number in the Appendix.

EPA (i) to receive additional evidence bearing on two issues, and (ii) to consider revising the 1983 effluent limitations in accordance with the evidence received. Amstar's request will be easily satisfied by EPA which is, as the Water Act requires it to do periodically, currently reviewing these cane sugar limitations.

STATEMENT OF ISSUES PRESENTED  
FOR REVIEW

1. Whether this Court should order EPA to take additional evidence in order to reconsider, during its current review of the crystalline cane sugar refining effluent limitations, its cost-benefit analysis of the 1983 BOD5\* limitations, in light of (i) Amstar's success in diverting or reducing BOD5 discharges from its refineries by 90+% and (ii) Amstar's estimated costs (on the order of \$10 million construction cost and \$2 million annual operating cost) required to attain the remaining reduction?

2. Whether this Court should order EPA to take additional evidence in order to consider, during its current review of the crystalline

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\* "BOD5" is defined at page 10, infra.

cane sugar refining effluent limitations, allowing the use of the logarithmic averaging method for calculating the monthly average of daily effluent discharge levels, when EPA itself has employed that same averaging method in numerous, statistically comparable circumstances?

#### STATEMENT OF THE CASE

On March 20, 1974, EPA promulgated final effluent limitations guidelines pursuant to the Water Act for, inter alia, existing point sources in the cane sugar refining industry. 39 Fed. Reg. 10522 (March 20, 1974) (R 3100-07, A-244-51). This promulgation of final guidelines followed publication of proposed effluent limitations guidelines, 38 Fed. Reg. 33846 (December 7, 1973) (R 2738, A-97), and preparation and dissemination of drafts of a "development document," the formal, public record of EPA's rationale and methodology underlying the limitations guidelines. The final Development Document\* was dated March 1974.

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\* As used herein, "Development Document" refers to the "Development Document for Effluent Limitations Guidelines and New Source Performance Standards for the Cane Sugar Refining Segment of the Sugar Processing Point Source Category" (March 1974) published by EPA. The Development Document appears in the Record on Review at pages 3108-3281 and is printed in the Appendix at pages 3108-3281. Citation to the Development Document will be indicated by "DD" followed by the page number.

Amstar filed this petition for review on June 17, 1974. California and Hawaiian Sugar Company ("C&H") and SuCrest Corporation ("SuCrest") also filed petitions for review of the effluent limitations guidelines. Following the transfer of C&H's petition from the Ninth Circuit, the several petitions were consolidated for review before this Court.

The briefing schedule for these petitions was stayed several times, once while the parties awaited promulgation of certain regulations material to the issues raised by the petitions, another time while the parties awaited this Court's decision whether the Courts of Appeals have jurisdiction to hear these petitions. Also underlying the second adjournment was EPA's motion, on June 25, 1976 (two weeks before petitioners' briefs were then due), to add some 800 pages to the 3,300-page Record on Review. EPA's motion was granted in part. A final adjournment was granted in view of the pendency before the Supreme Court of a case raising the jurisdictional issue. E.I. duPont de Nemours & Co. v. Train, 528 F.2d 1136 (4th Cir. 1975), cert. granted, 44 U.S.L.W. 3585 (U.S. Apr. 19, 1976).

On November 12, 1975, the Court granted the motion of C&H for an order staying, as to C&H only, the July 1, 1977

deadline for compliance for a period equal to that between September 30, 1975 and oral argument on this petition.

#### STATEMENT OF THE FACTS

##### A. The Parties

Petitioners Amstar, C&H and SuCrest own and operate cane sugar refineries affected by these regulations. Amstar operates five crystalline refineries, C&H operates two crystalline refineries, and SuCrest operates one crystalline-liquid refinery (DD 11, R 3127, A-271).

Respondent EPA promulgated the effluent limitations guidelines here under review.

##### B. Crystalline Cane Sugar Refining

Crystalline cane sugar refining is a process whereby unrefined raw sugar\* is treated to remove all impurities, including glucose, fructose, cane residue, microorganisms, and molasses, leaving only the end product: pure, white crystalline sucrose (DD 12, R 3128, A-272). The refining process has, generally speaking, four stages. The crystalline raw sugar is (i) washed to remove part of the molasses film,

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\* Raw sugar is produced by crystallizing the liquid obtained by crushing sugar cane. The Development Document defines raw sugar as "an intermediate product consisting of crystals of high purity covered with a film of low quality syrup" (DD 170, R 3278, A-422).

(ii) melted and placed into solution, (iii) taken through various purification steps and (iv) recrystallized and dried\* (DD 19, R 3135, A-279).

There are 14 crystalline refineries in the United States, five of which are owned and operated by Amstar (DD 14, R 3130, A-274). Because raw, unrefined sugar can be shipped without extensive sanitary safeguards and thus is more economically transported than refined sugar, crystalline refineries are generally located in urban, retail market areas (DD 12-14, R 3128-30, A-272-74). Of Amstar's five refineries, for example, four are located in urban areas: Baltimore, Boston, Brooklyn and Philadelphia. Amstar's fifth refinery is located in Chalmette, Louisiana (DD 14, R 3130, A-274).

#### C. Crystalline Refinery Waste Water

There are primarily two types of waste water in the typical crystalline refinery: process water and condenser water.

Process water is high quality fresh water used at several stages of refining. For example, water is used as a

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\* Cane sugar is also refined into liquid sugar (DD 12-16, 31-33, R 3128-32, 3147-49, A-272-74, A-291-93). Separate effluent limitations guidelines have been promulgated for the liquid cane sugar refining industry. 40 C.F.R. §§ 409.30-.36 (A-249). These petitions for review address only the crystalline sugar refining limitations.

solvent for the sugar as it is carried through the refining process. Water is also used to wash, when needed, various physical components of the refinery. One such component periodically washed is the "bone char" used in "bed bone char cisterns" found in the older refineries (DD 24, R 3140, A-284). Bone char cisterns act as filters to remove impurities and color from the partly screened sugar liquor and must periodically be washed and regenerated (id.). Although some of the water used to wash bone char is recycled for sucrose recapture (recapture is economical with high sucrose concentrations), some of this wash water is discharged as waste water (id.). Similarly, other process water streams in which sucrose removal is uneconomical or impossible are discharged as waste water.

Condenser water, or more accurately, barometric condenser cooling water, on the other hand, is the major waste water stream in any refinery in terms of volume (DD 53, R 3168, A-312). Condenser water is used to condense the water vapors which boil out of the sucrose solution as it is recrystallized during the last stage of the refining process (id.). A typical crystalline refinery uses raw, untreated river water on a once-through basis to condense the water vapors, discharging the flow into the same body of water from which it came (id.). Sugar is inadvertently added to

the condenser water stream when sucrose becomes "entrained," or mingled, with the vapors boiling out of the sucrose solution (DD 26-28, 54, R 3142-44, 3169, A-286-88, A-313). Reduction of sucrose entrainment is desired by every refiner (entrained sucrose is wasted product) and can be accomplished by the installation of various physical separator devices.

Neither the process nor condenser water contains toxic pollutants. The primary component of the discharged waste is ordinary sugar, which is "highly biodegradable" (DD 68, R 3182, A-326).

Amstar's four urban refineries (Boston, Brooklyn, Philadelphia and Baltimore) discharge their process waste water into municipal sewers, paying substantial fees for the privilege. The waste water is thereafter treated by the municipalities. At these refineries, therefore, only the condenser water stream is directly discharged into bodies of water within EPA's jurisdiction.

At present, Amstar's fifth refinery at Chalmette, Louisiana discharges both process and condenser waste water to jurisdictional bodies of water. A treatment plant is under construction, however, and when it is operational process water will be treated before being discharged. The condenser waste water will continue to be directly discharged into jurisdictional water.

D. The Statutory Scheme for Discharge Limitation

Generally speaking, the Water Act requires that the reduction of discharges from point sources (other than publicly owned treatment works) occur in two stages. First, by July 1, 1977, point sources are required to meet discharge limitations attainable through application of the "best practicable [pollution] control technology currently available" (BPCTCA), as defined by EPA. Second, by July 1, 1983, point sources must reduce their discharges to a level which would be achieved through application of the "best available technology economically achievable" (BATEA), as defined by EPA. Water Act § 301(b), 33 U.S.C. § 1311(b).

It should be stressed that the Water Act does not require point sources to install any particular technology; it requires only that the discharge of pollutants be reduced to the level which EPA determines would be achieved were the technology, as defined by EPA, actually installed. 39 Fed. Reg. 10523 (March 20, 1974) (Comment 19) (R 3102, A-246).\*

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\* Comment 19 reads, in part:

"The EPA's guidelines limit only the quantity and quality of the pollutants which may be discharged. Dischargers may employ any technology, including land disposal or other alternatives, which will result in compliance with such limitations."

In defining BPCTCA and BATEA, EPA is required to adhere to certain guidelines specified in the Act. For example, the 1983 BATEA technology specified by EPA must, inter alia, (i) be "economically achievable" (§ 301(b)(2)(A)), (ii) result in "reasonable further progress" toward the elimination of water pollution (id.), (iii) reflect an accurate assessment by EPA of "the cost of achieving such effluent reduction" (§ 304(b) (2)(B)), and (iv) not result in substantially adverse "non-water quality environmental impact (including energy requirements)" (id.).

The effluent limitations guidelines under review here require that the discharged effluent meet three separate limitations: BOD5, TSS and pH. 40 C.F.R. § 409.20-.23 (R 3104, A-248). "BOD5" represents Biochemical Oxygen Demand over 5 days. BOD5 is not a substance, as such, but rather a measure of the oxygen consuming capability of the discharge as it biodegrades over a five-day period (DD 67, R 3181, A-325). Thus, BOD5 in effluent results in the depletion of dissolved oxygen in the receiving water; the higher the BOD5, the higher the amount of oxygen depletion. Sucrose is the primary component of BOD5 discharged by the sugar refineries.

"TSS" represents Total Suspended Solids and is a measure of undissolved solids, both organic and inorganic, contained in effluent (DD 68, R 3182, A-326). The TSS limitations are not at issue in this petition.

"pH" is an expression of the concentration of hydrogen ions in effluent (DD 70, R 3184, A-328). The pH limitations are not at issue in this petition.

**E. Amstar's Reduction of Discharged Pollutants**

Data appearing in the Development Document indicates that at the time the Development Document was prepared, Amstar's four northern refineries\* generated in the aggregate approximately 16,820 pounds per day of BOD5 waste (DD 61, R 3176, A-320\*\*). At one time, practically all refinery wastes were discharged into the river. Now, however, Amstar pays substantial fees to divert much of its waste to municipal treatment plants. In addition, in-plant control of sucrose entrainment has further reduced the BOD5 waste discharged to the river. Although there is no data in the Record on Review reflecting discharge performance achieved by Amstar's refineries after the effluent limitations were promulgated, data filed with EPA by Amstar shows that in 1975 Amstar's

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\* Amstar's refineries are referred to in Development Document data compilations by the following codes: C-1 (Baltimore), C-2(Brooklyn), C-3(Chalmette, Louisiana), C-4(Philadelphia), C-5(Boston) (R 1589, A-39).

\*\* The following formula was used to convert the data appearing in Table 15 (DD 61, R 3176, A-320) to an expression of pounds per day of BOD5 generated:

$$\text{BOD5(lb/day)} = \text{Melt (kkg/day)} \times \text{BOD5 (kg/kkg of melt)} \\ \times 2.2 \text{ lb/kg (conversion factor)}$$

four northern refineries discharged, in the aggregate, an average of 1700 pounds per day of BOD5.\*

Thus, Amstar's four urban refineries have diverted or removed fully 90% of their BOD5 wastes from the water discharged to the rivers.

As stated above, Amstar is constructing a treatment plant to treat the process waste water from its fifth refinery, located in Louisiana. No figures are available regarding the discharge of BOD5 in the condenser water stream, but in-plant controls installed at that refinery help to reduce sucrose entrainment.

F. EPA's Current Review of the Cane Sugar Limitations

EPA is obligated by the Act to review periodically the effluent limitations guidelines and is accordingly now reviewing the cane sugar limitations. EPA has commissioned an outside firm, Colin A. Houston & Associates, to assess and report on the economic impact and feasibility of the 1983 limitations.\*\* Amstar and other cane sugar refiners have furnished information to the Houston firm in connection with its review.

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\* See discussion at page 22, infra. A summary of this data is annexed as Appendix A.

\*\* A report was to have been made public several months ago but its issuance has been delayed for unspecified reasons. It apparently will not be released until after petitioners' briefs are filed.

Amstar is informed and believes that as part of its review, the Houston firm is considering (i) the cost-benefit analysis of the 1983 BOD5 limitations and (ii) the logarithmic average method.

#### SUMMARY OF ARGUMENT

The regulations under review are faulty in two respects. First, the EPA's cost-benefit analysis of the 1983 BOD5 limitations ignores the substantial costs of installing cooling towers at urban refineries. Moreover, those substantial costs are not justified in view of Amstar's 90+% reduction in BOD5 discharge, obtained without cooling towers. Second, the regulations fail to allow dischargers to use a logarithmic average to compute the monthly average of the daily discharge levels, despite EPA's own use of that precise method in statistically identical circumstances.

Amstar requests the Court to order EPA to receive additional evidence and to consider the cost-benefit and logarithmic average issues during its reconsideration of the cane sugar limitations, which is proceeding at this time independently of this petition. Amstar further requests the Court to retain jurisdiction pending EPA's decision on these two issues.

## ARGUMENT

**EPA SHOULD BE ORDERED TO REVIEW,  
DURING ITS CURRENT RECONSIDERATION OF  
THE CANE SUGAR LIMITATIONS, THE COST-BENEFIT  
AND LOGARITHMIC AVERAGE ISSUES**

In this petition for review, Amstar requests that EPA, which is currently engaged in an independent review of the cane sugar refining limitations, be ordered to include in that review specific consideration of two issues.

First, Amstar contends that EPA's cost-benefit analysis of the 1983 BOD5 limitation totally failed to take into account the high expense of installing cooling towers at urban refineries. Furthermore, Amstar contends that the discharge performance of its refineries since promulgation of the limitations demonstrates that Amstar is diverting or removing better than 90% of raw wastes, and that the cost-benefit analysis for the 1983 BOD5 limitations should be reconsidered in light of this recent data.

Second, Amstar contends that EPA should sanction use of the logarithmic averaging method for calculating the monthly average of the daily discharge levels, in view of the fact that EPA itself has used the same method to average statistically comparable sets of values.

A. EPA's Cost-Benefit Analysis of the 1983 BOD5 Limitations Should be Reconsidered

Amstar's chief concern in this petition for review is whether it will be required by the 1983 BOD5 limitations to spend on the order of \$10 million to construct and \$2 million annually to operate cooling towers to avoid discharging the BOD5 equivalent of a few hundred pounds of sugar per day into the industrial rivers of the Northeast. Amstar contends that for several reasons EPA should be asked to take additional evidence and to review its cost-benefit analysis of the 1983 BOD5 limitations.

Cooling towers are specified by EPA as necessary to implement the 1983 limitations. The Development Document states:

"Implementation of this [BATEA] technology requires the following:

• • •

b. The addition of a cooling device to allow for the recirculation and reuse of barometric condenser cooling water" (DD 153, R 3260).

Nevertheless, EPA totally failed to analyze the costs of installing cooling towers in refineries located, as are four of Amstar's five refineries (DD 14, R 3130, A-274), in highly developed, urban areas.

EPA acknowledged in the Development Document that the cost of installing cooling towers in urban refineries

would very likely be high. For example, in the section of the Development Document which discusses costs, under the heading "Additional Installation Costs," EPA states:

"There are certain situations where the addition of a cooling tower or other cooling device could be impractical or uneconomical. One of these situations is a location in a downtown area where the surrounding land is already highly developed and unavailable. In these situations, other alternatives exist such as installing the cooling tower on the roof, in the basement, above a parking lot, or on land already in the possession of the cane sugar refinery. These alternatives may or may not result in significant cost increases." (DD 143, R 3256, A-400) (emphasis added).

On page 113, EPA states:

"Under the most adverse conditions (lack of available land with no suitable alternative, excessive drift, fogging, noise, or a combination of these factors), which are presently not anticipated, the costs of application of this technology (cooling devices) could in some instances result in significant cost increases." (R 3226, A-370) (emphasis added).

Finally, although EPA recognized the possibility of greatly increased costs for urban refineries, it conceded in the Development Document that the cost-benefit analysis for cooling tower technology did not take into account the cost of acquiring urban land for cooling towers or, alternatively, of having to construct the towers "on the roof, in the basement, [or] above a parking lot" (DD 143, R 3256, A-400):

"Land costs vary widely. The figures used herein are considered to be representative of non-urban areas where the use of land would

be expected. In urban areas land is often not available; when it is used, the cost can be expected to be substantially higher than reported in this document" (DD 109, R 3222, A-366) (emphasis added).

While EPA's candor is admirable, it is no substitute for the cost-benefit analysis required by the Water Act. In analyzing the costs of 1983 treatment technology, EPA must consider "the cost of achieving such effluent reduction." Water Act § 304(b)(2)(B), 33 U.S.C. § 1314(b)(2)(B). EPA "cannot leave utterly out of account what might reasonably be expected to be significant cost factors." American Iron and Steel Institute v. EPA, 526 F.2d 1027, 1076 (3d Cir. 1975) (Adams, J., concurring) (land acquisition costs not included in cost estimates). It is apparent that EPA, which employed absurdly low land acquisition costs (R 205, A-6) and which ignored the costs of constructing cooling towers on the roof or in the basement of urban refineries (DD 109, 143, R 3222, 3256, A-366, A-400), left "utterly out of account . . . significant cost factors." For this reason alone, a remand of the 1983 BOD<sub>5</sub> limitations is justified, even in view of the stringent standard of review in this Court, for it is evident that EPA's decision regarding the cost of cooling tower technology was not "based on a consideration of the relevant factors." Citizens to Preserve Overton Park v. Volpe, 401 U.S. 402, 416 (1971). See also

American Iron and Steel Institute v. EPA, supra p. 17, 526 F.2d at 1075 (Adams, J., concurring) (record fails to demonstrate that EPA's decision was "based on a consideration of all the significant relevant factors").

In addition, EPA's use of 1971 cost data, rather than 1973 or 1974 data, renders its economic analysis defective. See CPC International, Inc. v. Train, 515 F.2d 1032 (8th Cir. 1975) (1971 cost data judged deficient; EPA directed to update figures on remand).

Finally, EPA is directed by the statute to fix 1983 BATEA limitations at levels "which will result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants . . . ." Water Act § 301(b)(2) (A)(i), 33 U.S.C. § 1311(b)(2)(A)(i). This statutory language requires EPA to

"consider the benefits derived from the application of its effluent reduction requirements in relation to the associated costs in order to determine whether, in fact, the resulting progress is 'economically achievable,' and whether the progress is 'reasonable.'" Appalachian Power Co. v. Train, Nos. 74-2096 et al. (4th Cir., July 16, 1976) (Slip Op. at 24).

Thus, EPA was required to balance the additional cost of 1983 technology against the "resulting progress," or the marginal reduction of pollution.

Initially, it is clear that EPA did not conduct any such analysis. EPA's discussion of the costs and benefits of

various types of technology, found in Section VIII of the Development Document (DD 103-143, R 3216-56, A-360-400), fails in two respects. First, EPA fails to identify what environmental benefits flow from the installation of cooling towers. EPA notes only that cooling towers would reduce BOD5 discharge by an estimated 0.68 pounds per ton of melt,\* a figure which is only 18.3% of the typical refinery's total BOD5 waste load (DD 116, R 3229, A-373).\*\* Nowhere does EPA attempt to define what benefits will flow from this small, incremental reduction, nor does it explain why it cannot do so.\*\*\* The Water Act requires more:

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- \* "Melt," an expression of refinery capacity, refers to the weight of raw sugar processed, or "melted," per day.
  - \*\* The "Reduction Benefits" of cooling towers specified by EPA in the Development Document are, in full:

"An incremental reduction in BOD5 of approximately 0.34 kilograms per metric ton (0.68 pounds per ton) of melt and in suspended solids of 0.055 kilograms per metric ton (0.11 pounds per ton) of melt is evidenced by addition of this Alternative to Alternative D. Total reductions of 95.1 percent for BOD5 and 99.6 for suspended solids would be achieved" (DD 114, R 3227, A-371).

- \*\*\* EPA does discuss, in a brief and extremely general fashion, the adverse environmental effects of discharged BOD (DD 67-68, R 3182-83, A-326-27). The discussion includes the following general comments:

"The BOD does not in itself cause direct harm to a water system, but the matter which it measures may exert an indirect

(Footnote continued on next page)

"At the very least, on the best information available, the ecological benefits expected from the ordered reduction should be stated, and, if impossible so to do, EPA should state why." Appalachian Power Co. v. Train, supra p. 18, at 31.

The Record before this Court contains no such specification, nor any such explanation.

Second, EPA's analysis makes no effort to compare the (unspecified) environmental benefits to the incremental costs. It only notes the costs.\* Again, the Water Act requires more:

(Footnote cont'd)

effect by depressing the oxygen content of the water. Sewage and other organic effluents during their processes of decomposition exert a BOD, which can have a catastrophic effect on the ecosystem by depleting the oxygen supply" (DD 67, R 3181, A-325) (emphasis added).

The following comment is the only discussion appearing in the Development Document which specifically addresses the effect of BOD in cane sugar refining wastes:

"Typical BOD<sub>5</sub> levels in both crystalline and liquid cane sugar refining are quite high, ranging from several hundred to several thousand mg/l for certain waste streams. Discharge of such wastes to surface waters can result in oxygen depletion and damage to aquatic life" (DD 68, R 3182, A-326) (emphasis added).

\* Which industry has stated were seriously underestimated (R 2975-3018, A-189-232). For example, EPA's estimated cost for the construction of a cooling tower for a 2100 ton refinery is \$400,000 (DD 128, R 3241, A-385). The EPA did not provide any detailed derivation of this figure. The submission to EPA by the United States Cane Sugar Refiners Association, on the other hand, projected the

(Footnote continued on next page)

"[I]n determining whether a particular reduction level is, in fact, reasonable, EPA must compare the cost of achieving that level of reduction . . . and the ecological benefits to be derived therefrom . . . with the benefits and costs of alternative levels of [pollution] reduction." Appalachian Power Co. v. Train, supra p. 18, at 30-31.

It is not enough merely to assume that reduction of BOD5 discharge will result in some unspecified environmental benefit. The question which EPA must here answer is: "Where the incremental reduction is so small and the incremental cost so large, if there is no expectancy of certain benefits to water quality and aquatic life, is the expenditure of millions of dollars warranted?"

Amstar contends that an examination of the BOD5 discharge performance of its refineries during the period following promulgation of these regulations will demonstrate that the massive costs of cooling tower installation are not

(Footnote cont'd)

cost of such a tower as \$1,910,000 and supported its estimate with detailed background data, obtained from an existing tower and an engineering feasibility study (R 2939-41, A-177-79). After receiving this detailed industry criticism of the understated cost data, EPA replied as follows when the regulations were finally promulgated:

"(16) The comment was made that the capital and operating costs of treatment appear to be understated.

The Agency has reexamined the cost data and finds that these data are accurate and substantiate the reasonableness of the proposed regulations." 39 Fed. Reg. 10523 (R 3102, A-246).

justified by the minimal incremental reduction in BOD5 discharge.

Recent data filed by Amstar with the EPA pursuant to the NPDES monitoring program shows that in 1975, without cooling towers, Amstar's refineries at Brooklyn and Philadelphia came within roughly one per cent (expressed as a percentage of each refinery's raw waste load) of meeting the 1983 BOD5 limitations.\* In other words, if the refineries were able to effect a further reduction in BOD5 discharge of 1% of their total raw wastes, or if the 1983 BOD5 limitation were only slightly adjusted, the refineries would be in full compliance for 1983, without having to engage in the construction and operation of cooling towers, which EPA itself admits may be extremely costly for urban refineries. At Brooklyn, where the raw waste load is 4200 pounds per day of BOD5, a further reduction of only 60 pounds per day, or a comparable easing of the 1983 limit, would bring the refinery into 1983 compliance. At Philadelphia, the comparable figure in 1975 was 94 pounds per day.\*\*

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\* Calculations of average waste discharges employed, as required by the NPDES permits, the arithmetic mean averaging method. See discussion of this method and the logarithmic averaging method at pages 23-29, infra.

\*\* The 1975 performance of Amstar's refinery in Baltimore met the 1983 BOD5 limit, while the Boston refinery, which experienced unusual problems in 1975, came within 20% of meeting the 1983 limit. Amstar's fifth refinery in Chalmette, Louisiana, a non-urban location, cannot be usefully compared to the four Northeast urban refineries because it does not divert its process waste to municipal sewers and therefore is required to construct a treatment plant.

This 1975 discharge information, which is not in the record before this Court because it was not available when the regulations in question were being prepared, is summarized in Appendix A annexed to this brief.

In conclusion, Amstar's position on EPA's 1983 cost-benefit analysis is two-pronged. First, EPA's cost analysis was deficient in failing to consider the costs of installing cooling towers in urban locations; the regulations should be remanded for reconsideration of this issue. Second, whether or not the Court agrees that EPA's cost analysis was inadequate, EPA should be ordered, pursuant to § 509(c), to receive additional evidence bearing on the industry's current BOD5 discharge performance and to consider whether the slight incremental reduction in BOD5 discharge obtained with cooling towers is justifiable in view of their immense cost.

**B. EPA Should Be Required to Pass Upon the Logarithmic Average**

The effluent limitations guidelines require that a point source's discharges independently satisfy two separate limitations. The first is a daily maximum, the second, an "average of daily values for 30 consecutive days." In other words, the discharge for any particular day must be below the daily maximum, while the monthly average of

daily discharges must be below a monthly maximum (which is less than the daily limit). For example, the 1983 BOD5 daily maximum is 0.36 pounds per ton of "melt," and the monthly maximum is 0.18 pounds per ton of melt. Neither the Act nor its legislative history requires that the limitations be expressed in this manner. Consequently, no particular averaging method was specified by Congress.

Amstar's second request in this petition is that EPA, during its current review of these regulations, be required to consider and evaluate publicly the use of the logarithmic averaging method in calculating the monthly discharge averages. Amstar has discussed this proposal with EPA representatives, but the issue was not formally considered by EPA during its promulgation of these regulations.\*

EPA regulations do not prescribe the averaging method to be employed by dischargers. All that EPA by regulation requires is that effluent flow "be monitored at intervals sufficiently frequent to yield data which reasonably

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\* Information available to Amstar leads it to believe that EPA and its contractor are currently evaluating the logarithmic average proposal. Nevertheless, because Amstar could not obtain judicial review of an EPA decision to reject the logarithmic average, in that such a decision would leave the present regulations unchanged, Amstar is compelled to raise the issue now to avoid losing its statutorily limited right of review.

characterizes the nature of the discharge . . . ." 40 C.F.R. S 125.27(c) (emphasis added).

The NPDES permits,\* however, commonly specify the "arithmetic mean" averaging method. This is the method commonly used to "average" a set of numbers: the sum of the numbers divided by the quantity of numbers in the set produces the arithmetic mean. This method is an appropriate and accurate expression of the "central tendency" of a set of numbers when those numbers are "normally" or "symmetrically" distributed.\*\*

Some sets of numbers, however, are not normally distributed. Where the range of data is large and there exist a few relatively large values, the distribution is said to be "skewed" and the arithmetic mean is an inadequate expression of the central tendency of the values. In such a

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\* National Pollutant Discharge Elimination System permits are issued to dischargers pursuant to Water Act S 402 by the EPA or by a state if it has qualified as a permitting authority pursuant to S 402(a)(5).

\*\* One example of a normal distribution, which when plotted graphically produces the familiar "bell-shaped curve," is obtained when the intelligent quotients of children are measured. The I.Q.'s cluster around 100, with a few children measuring at the low or high extremes. In this example, the arithmetic mean would be roughly 100 and would be an accurate expression of the central tendency of the children's numerical I.Q.'s. A. Bahn, Basic Medical Statistics 93-95 (1972).

case, the logarithms\* of the values may be normally distributed (producing a "log normal distribution") and, thus, the average of the logarithms can produce an accurate expression of the central tendency.

Without going into greater detail, statisticians agree that the arithmetic mean is appropriately used where the numbers are normally distributed; where the logarithms of the numbers are normally distributed, the logarithmic average is more appropriate.

In determining and promulgating effluent limitations guidelines under the Water Act, EPA has on several occasions itself used the logarithmic average where it found that the data being examined was better described by the log average than by the arithmetic average. For example, EPA employed the log average to calculate raw waste loads for the canned and preserved fruits and vegetables point source category. In promulgating the final limitations, EPA answered public criticism that using a log average underestimated raw waste loads, as follows:

"The EPA prepared a data distribution of the major wastewater parameters. A standard normal distribution model was studied and found to be

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\* The logarithm (also "log") of a number N is the exponent that indicates the power to which a given base number (usually 10) is raised to produce the number N. For example, if  $N = 100$ , the log to the base 10 of N is 2, since  $10^2 = 100$ .

inadequate for most cases because the range of data was large and the data tended to be skewed with a few relatively large values. Also, the normal distribution allowed for negative values which do not occur for the pollutant parameters being examined. The log normal distribution is the distribution commonly used for only positive values which are skewed right to allow for a few large values. The set of the logarithms of values in the distribution conforms to normal distribution, and standard readily available statistical techniques can be employed to analyze them. The log normal distribution was investigated and found to describe the raw waste data collected from this industry segment better than the normal distribution.

... Since the log normal distribution model described the data distribution better than the normal distribution, the log normal distribution was used to establish the raw waste loads within each subcategory." 41 Fed. Reg. 16272 (April 16, 1976) (emphasis added).

The same criticism, that by using the log average EPA had underestimated raw waste loads (and thus had underestimated the difficulties of reducing the discharged waste), was answered by EPA in the same fashion in its final promulgation of the limitations for the canned and preserved seafood processing point source category. See 40 Fed. Reg. 55772 (Comment 4\*), 55774 (Comment 12) (December 1, 1975).

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\* Comment 4 reads, in part:

"An analysis of the natural distribution of the major waste water parameters indicated that the standard normal distribution model was large and the data tended to be skewed with some relatively large values. Also, the normal distribution allowed for negative values which do not occur in actuality for

(Footnote continued on next page)

An independent study of the BOD content of intake and discharge water at Amstar's Philadelphia refinery concluded that, as with the BOD data analyzed by EPA in other industries,

"Lognormal model of BOD<sub>5</sub> content appears to describe the frequency distribution of both intake and discharge streams satisfactorily." A Statistical Analysis of the BOD and FSOD Content of Intake and Discharge Water at Amstar-Philadelphia Refinery, WARF Institute Inc., Madison, Wisconsin, page 3 (R 615).

Thus, EPA has before it an expert's conclusion showing that the log average is the more appropriate method to average the daily discharge levels.

Nevertheless, EPA representatives involved in the preparation of the cane sugar limitations have expressed disapproval of the log average technique because it tends to

(Footnote cont'd)

the pollution parameters being examined. The log normal distribution was investigated and found to adequately describe the data collected from this industry segment. The log normal distribution is the distribution commonly used for only positive values which are skewed right to allow for some large values. The set of the logarithm of values in the distribution conforms to the normal distribution and standard statistical techniques can be employed. Because the lognormal distribution model described the data distribution better than the normal distribution, the log normal distribution was used to establish subcategory summary waste loads." 40 Fed. Reg. 55772 (December 1, 1975) (emphasis added).

lessen the effect of large daily discharges. The above excerpts demonstrate that EPA uses the log average where it is statistically appropriate; to deny its use to dischargers where it is just as statistically appropriate would be anomalous and inequitable. For this reason, Amstar requests that EPA be ordered to consider allowing dischargers to use the log average, and to report publicly its determination.

C. Granting Amstar's Request Will Not Work a Substantial Hardship on EPA

A remand of the crystalline cane sugar refining limitations for consideration of the two issues proposed by Amstar will not substantially hinder EPA's regulatory efforts, because EPA is at this time engaged in a review of those same limitations. Amstar and other refiners have supplied information to EPA and its outside contractor, Colin A. Houston & Associates, and have consequently been informed of the current review.

In fact, Amstar is informed and believes that the review is considering both issues which it proposes be considered: the cost-benefit analysis for 1983 and the logarithmic average. Thus, a remand for consideration of these issues would only require EPA to do what it is already doing anyway.

D. Amstar's Request Is Consistent With  
the Rationale Underlying the Act's  
Procedure for Judicial Review

When it enacted the Water Act, Congress included specific provisions governing judicial review which afforded review of certain EPA actions in the Courts of Appeals, but required that any application for review be made within 90 days of EPA's action, unless the "application is based solely on grounds which arose" after 90 days. Water Act § 509(b)(1), 33 U.S.C. § 1369(b)(1). Furthermore, the Act specifically provides that

"(2) Action of the Administrator with respect to which review could have been obtained under [Section 509(b)(1)] shall not be subject to judicial review in any civil or criminal proceeding for enforcement." Water Act § 509(b)(2), 33 U.S.C. § 1369(b)(2).

As a result of these limitations on judicial review, many dischargers filed petitions for review as a "protective" measure to preserve their right to review while ambiguities in or minor problems with the limitations were discussed with EPA. Amstar has resolved one such issue during the pendency of this petition.\*

\* Amstar had been concerned that the 1983 limitations might be applied on a "gross" rather than a "net" basis. Application of the limitations on a "gross" basis would have required Amstar to remove pollutants already present in the water it draws from the river even if its use of the water added no pollutants whatsoever. Application of the limitations on a "net" basis requires Amstar to control only the pollutants which it adds to the water stream.

(Footnote continued on next page)

As to the two remaining issues discussed above, however, Amstar does not wish to lose its right of judicial review. If it were later determined that these issues should have been raised in this petition but were not, § 509(b)(2) provides that Amstar could not litigate them at all even in an enforcement proceeding brought against it.

Accordingly, Amstar proposes that the Court invoke Section 509(c) to require EPA to receive additional evidence on the cost-benefit and logarithmic average issues. Section 509(c), set out in full below\*, unmistakably empowers the

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(Footnote cont'd)

After this petition was filed, EPA promulgated a regulation (40 C.F.R. § 125.28) addressing the net-gross issue. A letter to Amstar's attorney from Carl Schafer, Acting Director of the Permits Division of the EPA Office of Enforcement, dated July 12, 1976, confirms that Amstar's refineries, which minimize BOD5 discharge by employing in-plant controls to limit sucrose entrainment in the condenser water stream (rather than end-of-pipe treatment technology), will qualify for the application of the limitations on a "net" basis. Amstar therefore does not raise the net-gross issue in this petition.

\* Section 509(c) reads:

"(c) In any judicial proceeding brought under subsection (b) of this section in which review is sought of a determination under this Act required to be made on the record after notice and opportunity for hearing, if any party applies to the court for leave to adduce additional evidence, and shows to the satisfaction of the court that such additional evidence is material and that there were rea-

Court to

"order such additional evidence (and evidence in rebuttal thereof) to be taken before the Administrator, in such manner and upon such terms and conditions as the Court may deem proper."

The Administrator is thereafter required to file with the Court his modified or new findings together with the additional evidence received.

It is self-evident that the evidence which Amstar wishes the EPA to take could not have been adduced before these regulations were promulgated. Concerning the cost-benefit issue, data on the improved discharge performance of Amstar's refineries in 1975 was of course unavailable in 1974. Thus it was impossible for the EPA to recognize that the construction cooling towers in expensive urban locations might be obviated by a slight easing of the 1983 BOD5 limit. Regarding the logarithmic average issue, it

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(Footnote cont'd)

sonable grounds for the failure to adduce such evidence in the proceeding before the Administrator, the court may order such additional evidence (and evidence in rebuttal thereof) to be taken before the Administrator, in such manner and upon such terms and conditions as the court may deem proper. The Administrator may modify his findings as to the facts, or make new findings, by reason of the additional evidence so taken and he shall file such modified or new findings, and his recommendation, if any, for the modification or setting aside of his original determination, with the return of such additional evidence." 33 U.S.C. § 1369(c).

was not apparent until after the regulations were promulgated that EPA itself was employing that method of averaging in statistically comparable situations.

Finally, Amstar requests that this Court retain jurisdiction of this petition pending EPA's reconsideration, in order to guarantee and expedite judicial review of EPA's determinations. CPC International, Inc. v. Train, 515 F.2d 1032, 1050 (8th Cir. 1975) (citing cases); American Meat Institute v. EPA, 526 F.2d 442, 467 (7th Cir. 1975).

CONCLUSION

The 1983 BOD5 limitations should be remanded to EPA with instructions to consider the costs of constructing cooling towers at urban refineries, particularly in light of Amstar's 90% reduction or diversion of BOD5 discharges from its four urban refineries.

EPA should be ordered to take evidence on and consider the use of the logarithmic averaging method.

The Court should retain jurisdiction of this petition pending EPA's consideration of these issues.

September 1, 1976

Respectfully submitted,

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Attorneys for Petitioner  
Amstar Corporation

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Of Counsel.

## Appendix A

### Comparison of 1975 BOD5 Discharge Performance of Amstar's Four Urban Refineries to 1983 BOD5 Limit

<u>finery</u>	Baltimore (C-1)	Brooklyn (C-2)	Philadelphia (C-4)	Boston (C-5)
<u>lt*</u> (tons/day)	2600	2100	2100	1000
<u>w Waste Load**</u>				
bs/ton of melt	1.26	2.00	3.40	2.20
bs/day	3,380	4,200	7,140	2,100
<u>75 Performance***</u>				
bs/ton of melt	0.08	0.21	0.22	0.61
bs/day	203	438	472	606
<u>83 Limit</u>				
bs/ton of melt	0.18	0.18	0.18	0.18
bs/day	468	378	378	180
duction of discharge or comparable easing f limit) necessary to ring Amstar into ompliance				
bs/ton of melt	none	0.03	0.04	0.43
bs/day	none	60	94	426
of raw waste load	none	1.4%	1.3%	20.3%

\* Source: DD 11, R 3118. Conversion formula:  

$$\text{Melt (tons/day)} = \text{Melt (kkg/day)} \times 1.103 \text{ (tons/kkg)}$$

\* Source: DD 61, R 3168. Conversion formula:  

$$\text{BOD5 (lbs/tons)} = \text{BOD5 (kg/kkg)} \times 2.2 \text{ (lbs/kg)} \times (.909 \text{ kkg/tons})$$

\* Source: NPDES discharge monitoring reports filed with EPA.

All averages computed using arithmetic mean.

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UNITED STATES COURT OF APPEALS  
FOR THE SECOND CIRCUIT

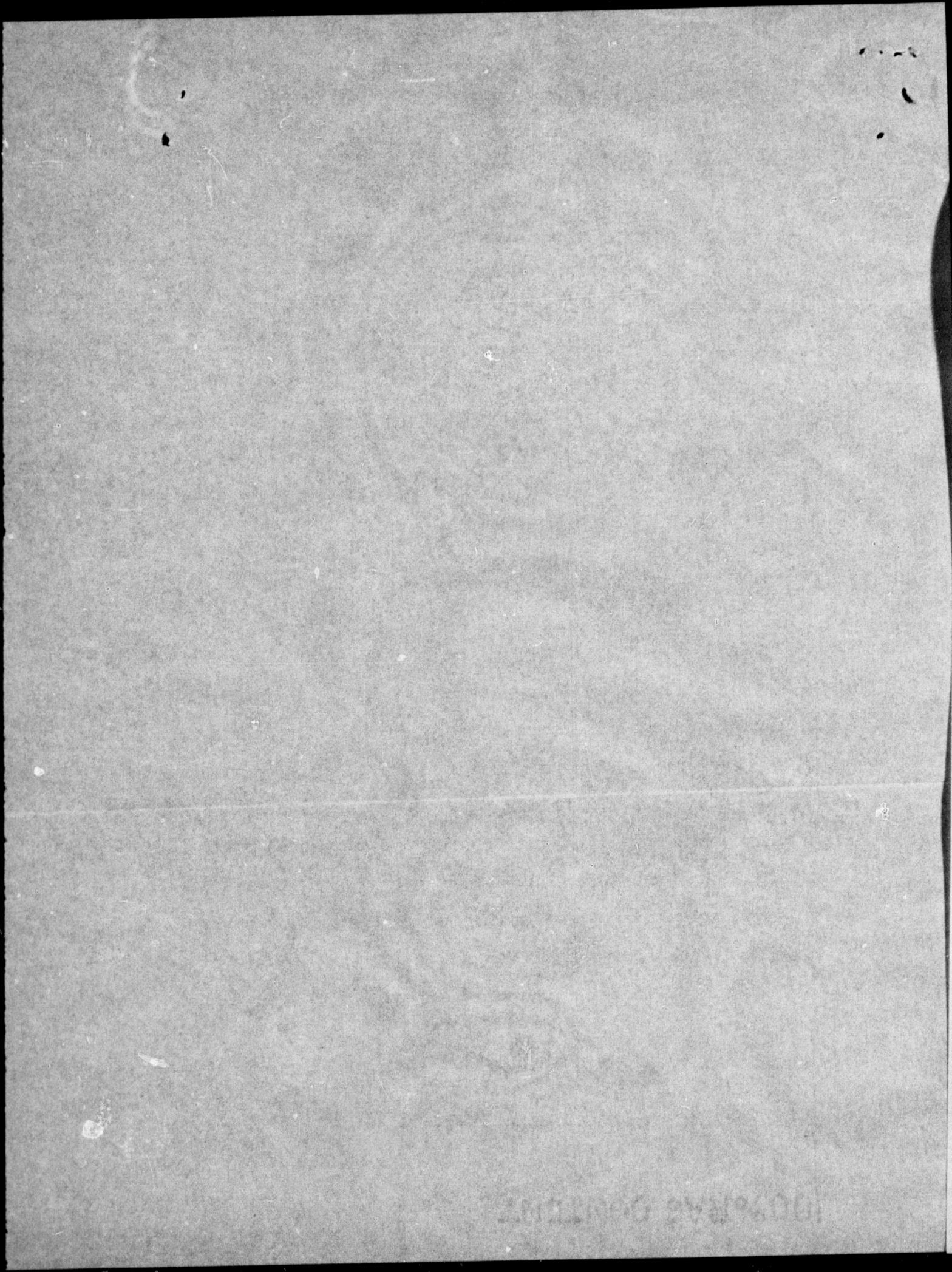
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AMSTAR CORPORATION, CALIFORNIA and :  
HAWAIIAN SUGAR COMPANY and SUCREST :  
CORPORATION, :  
Petitioners, :  
-against- : 74-1830  
UNITED STATES ENVIRONMENTAL PROTECTION :  
AGENCY, :  
Respondent. :  
- - - - - x

STATE OF NEW YORK )  
: SS.:  
COUNTY OF NEW YORK )

GEORGE A. SCHOLZE, being duly sworn, deposes and  
says that he is an attorney associated with the firm of  
Sullivan & Cromwell, attorneys for Petitioner Amstar Corpora-  
tion; that on the 23rd day of November, 1976 he served the  
within Brief upon the following attorneys at the following  
addresses by depositing two true copies of the same to each,  
securely enclosed in a postpaid wrapper in the Post Office  
Box regularly maintained by the United States Government at  
48 Wall Street, Borough of Manhattan, City and State of New  
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George A. Scholze

Sworn to before me this  
23rd day of November, 1976

Eileen L. Franklyn  
Notary Public

EILEEN L. FRANKLYN  
NOTARY PUBLIC, State of New York  
No. 31-1303130  
Qualified in New York County  
Commission Expires March 30, 1977